WHAT IS CLAIMED IS:

1. A method for detecting a compromised condition of a patient comprising the steps of:

(a) providing for imaging in three dimensions a region of interest;

(b) providing for generating a set of 3-D image data corresponding to the imaging;

(c) providing for processing the set of 3-D image data for determining a first volume of an imaged first structure within the region of interest, wherein the volume of the first structure does not change substantially during adulthood over a time interval selected from the group consisting of months and years;

(d) providing for processing the set of 3-D image data for determining a second volume of an imaged second structure within the region of interest, wherein a substantial change during adulthood of the volume of the second structure over a time interval selected from the group consisting of months and years is indicative of the compromised condition; and

(e) providing for calculating a ratio of the second volume to the first volume.

2. The method according to claim 1, wherein the volume of the first structure is defined by the volume of a skull of the patient.

3. The method according to claim 1, wherein the second structure is included in the lateral ventricles of the brain of the patient.

4. The method according to claim 1, wherein the volume of the first structure is the intracranial volume of the brain of the patient.

5. The method according to claim 1, further comprising the step of:

(f) providing for determining if the calculated ratio is within a first predetermined range for detecting the compromised condition.

6. The method according to claim 1, further comprising the steps of:

(f) providing for repeating steps (a)-(e) at least one time, each repetition performed after a time interval;

(g) providing for comparing the calculated ratio of one repetition to at least one ratio calculated at a previous time interval; and

(h) providing for determining if the difference between a ratio that corresponds to one repetition and a ratio that corresponds to a previous repetition is within a second predetermined threshold for detecting the compromised condition.

7. The method according to claim 1, wherein the compromised condition is Alzheimer's disease.

8. The method according to claim 1, wherein step (a) includes providing for imaging using magnetic resonance imaging.

9. The method according to claim 1, wherein step (a) includes providing for imaging using at least dual echo magnetic resonance imaging.

10. The method according to claim 1, wherein step (a) includes the steps of:

providing for generating a first set of 3-D image data in which the first structure is well defined using a first echo of an at least dual echo MRI; and

providing for generating a second set of 3-D image data in which the second structure is well defined using a second echo of the at least dual echo MRI.

11. The method according to claim 1, wherein at least one of steps (c) and (d) includes the step of providing for automatically segmenting for determining the first and second volume, respectively.

12. The method according to claim 11, wherein in the step of providing for automatically segmenting includes the steps of:

providing for generating a plurality of successive layers of fixed radius spheres about a circumference of a sphere containing at least one seed point placed within the object of interest, including one of the first and second structures, when a plurality of respective voxels contained within the spheres exceed a selected threshold; and

providing for repeating generation of the layers until no further voxels contained within an outer surface of each respective layer exceed the selected threshold, the layers forming a segmented representation of the object of interest.

13. A computer apparatus for detecting a compromised condition of a brain comprising:

means for receiving a set of 3-D image data corresponding to imaging in three dimensions of a region of interest;

first means for processing the set of 3-D image data for determining a volume of an imaged first structure within the region of interest, wherein the volume of the first structure does not change substantially during adulthood over a time interval selected from the group consisting of months and years;

second means for processing the set of 3-D image data for determining a volume of an imaged second structure within the region of interest, wherein a substantial change during adulthood of the volume of the second structure over a time interval selected from the group consisting of months and years is indicative of the compromised condition; and

means for calculating a ratio of the volume of the second structure to the volume of the first structure.

14. The computer apparatus according to claim 13, wherein the volume of the first structure is the intracranial volume of the brain of the patient.

15. The computer apparatus according to claim 13, wherein the volume of the first structure is defined by the volume of a skull of the patient.

16. The computer apparatus according to claim 13, wherein the second structure is included in the lateral ventricles of the brain of the patient.

17. The computer apparatus according to claim 13, further comprising means for determining if the calculated ratio is within a first predetermined range for detecting the compromised condition.

18. The computer apparatus according to claim 13, wherein the means for receiving receives a series of sets of 3-D image data corresponding to repetitive imaging of the region of interest, with each repetition performed after a time interval, the first and second means for processing processes each received set of 3-D image data; the means for calculating the ratio calculates a ratio that corresponds to each received set of 3-D image data, the computer apparatus further comprising:

means for comparing a first calculated ratio corresponding to one received set of 3-D image data of the series of received sets of 3-D image data to a second calculated ratio that corresponds respectively to a preceding set of 3-D image data of the series of received sets of 3-D image data; and

means for determining if the difference between the first and second ratios is within a second predetermined threshold for detecting the compromised condition.

19. The computer apparatus according to claim 13, wherein the compromised condition is Alzheimer's disease.

20. The computer apparatus according to claim 13, wherein the received set of 3-D image data is generated using magnetic resonance imaging.

21. The computer apparatus according to claim 13, wherein the received set of 3-D image data is generated using at least dual echo magnetic resonance imaging.

22. The computer apparatus according to claim 13, wherein the received set of 3-D image data includes a first set of 3-D image data in which the first structure is well defined using a first echo of an at least dual echo MRI; and
a second set of 3-D image data in which the second structure is well defined using a second echo of the at least dual echo MRI.

23. The computer apparatus according to claim 13, wherein at least one of the first and second means of processing includes means for determining the first volume and means for determining the second volume, respectively includes means for performing automatic segmentation.

24. The computer apparatus according to claim 23, wherein the means for performing automatic segmentation includes:

means for generating a plurality of successive layers of fixed radius spheres about a circumference of a sphere containing at least one seed point placed within the object of interest, including one of the first and second structures, when a plurality of respective voxels contained within the spheres exceed a selected threshold; and

means for repeating generation of the layers until no further voxels contained within an outer surface of each respective layer exceed the selected threshold, the layers forming a segmented representation of the object of interest.